

CLAIMS

What is claimed is:

- 1 1. A pressure-vent hurricane shutter comprising:
 - 2 at least one shutter framework encompassing slatted-louver apertures;
 - 3 said shutter framework including structural beams to which ends of
 - 4 slanted slats for the slatted-louver apertures are affixed;
 - 5 slat-support guides oriented vertically and having ends attached to
 - 6 horizontal portions of said spacer;
 - 7 slat-support cover affixed to one slat-support guide;
 - 8 mullion slat-support cover affixed to at least two adjacent slat-support
 - 9 guides;
 - 10 said structural beams on said shutter framework affixed to the outside edge
 - 11 of said slat-support guides;
 - 12 the slanted slats having inward edges that are oriented orthogonally to the
 - 13 mullion slat-support covers;
 - 14 the slanted slats having outward edges that are oriented orthogonally to the
 - 15 slat-support guides;
 - 16 the inward edges intermediate the ends of the slanted slats being attached
 - 17 to the mullion slat-support covers;
 - 18 the outward edges intermediate the ends of the slanted slats being attached

19 to the slat-support guides;

20 at least one shutter hinge proximate at least one edge of the shutter

21 framework;

22 the shutter framework being hinged to at least one structural member of a

23 building proximate a building aperture;

24 the shutter framework, the slanted slats, the slat-support guides, the hinge

25 and inter-structural attachments thereof having a structural composite that has at

26 least predetermined requisite strength for shutter-related protection of the

27 building against storm-borne objects, wind and rain; and

28 the slatted-louver apertures having predetermined venting of storm

29 buildups and bursts of pressure and vacuum that react on buildings.

1 **2. The pressure-vent hurricane shutter of claim 1 wherein:**

2 the structural beams included in the shutter framework are structural metal

3 tubes having a cross section that is rectangular; and

4 a metal of which the structural metal tubes are made has predetermined

5 material strength, rigidity, thickness and structure for the shutter framework to

6 have the structural composite with at least the requisite strength for shutter-

7 related protection of the building against storm-borne objects, wind and rain.

1 **3.** The pressure-vent hurricane shutter of claim 1 wherein:

2 the structural beams included in the shutter framework are structural

3 aluminum tubes having a cross section that is rectangular with face walls being

4 about one to two inches wide and orthogonal edge walls being about one and

5 one-half inches wide;

6 the face walls and the edge walls being about one-eighth of an inch thick;

7 the metal of the structural aluminum tubes being aluminum alloy 6063-

8 T52 or at least a substantial equivalent thereof; and

9 the structural beams of the shutter framework are affixed together at

10 joining edges.

1 **4.** The pressure-vent hurricane shutter of claim 1 wherein:

2 the slanted slats include structural flat-bar metal having a cross section that

3 is rectangular; and

4 a metal of which the slanted slats are made has predetermined material

5 strength, rigidity, thickness and structure for the slanted slats to have the

6 structural composite with at least the requisite strength for slatted-louver

7 protection of the building against storm-borne objects, wind and rain.

1 **5.** The pressure-vent hurricane shutter of claim 1 wherein:

2 the slanted slats are structural aluminum flat bar having a cross section
3 that is rectangular with face walls being about one inch wide and edge walls
4 being about one-quarter of an inch wide;
5 the slanted slats being about one-quarter of an inch thick;
6 the metal of the slanted slats being aluminum alloy 6063-T52 or at least a
7 substantial equivalent thereof;
8 the ends of the slanted slats are affixed to the shutter framework;
9 the inward edges of the slanted slats are affixed to the slat-support covers;
10 and
11 the outward edges of the slanted slats are affixed to the slat-support
12 guides.

1 **6.** The pressure-vent hurricane shutter of claim 1 wherein:
2 the face walls of the slanted slats are spaced apart about one-half inch
3 orthogonally; and
4 the slanted slats are juxtaposed vertically with dihedral angles of the face
5 walls and dihedral angles of the edge walls being horizontal.

1 **7.** The pressure-vent hurricane shutter of claim 1 wherein:
2 hold down tabs are affixed to horizontal portions of the shutter framework;

3 said hold down tabs have a hole in which a screw of a predetermined size
4 can be inserted; and

5 said hold down tabs are made of a metal of predetermined material
6 strength, rigidity, thickness and structure for the shutter framework to have the
7 structural composite with at least the requisite strength for shutter-related
8 protection of the building against storm-borne objects, wind and rain.

9 **8.** The pressure-vent hurricane shutter of claim 1 wherein:
10 the shutter hinge is ribbed.

1 **9.** The pressure-vent hurricane shutter of claim 1 wherein:
2 the shutter framework is a Bahama Shutter having top-hinge with which it
3 is hinged to the structural member of the building proximate the building
4 aperture.

1 **10.** The pressure-vent hurricane shutter of claim 1 wherein:
2 the shutter framework is a Colonial Shutter having side-hinges with which
3 it is hinged to sides of the structural member of the building proximate the
4 building aperture.

- 1 **11.** The pressure-vent hurricane shutter of claim 1 wherein:
- 2 the structural member of a proximate a building aperture has a hole
- 3 corresponding to the location of the hold down tabs.
- 1 **12.** The pressure-vent hurricane shutter of claim 1 wherein:
- 2 said slat-support guides have a front wall, two side walls, and a back wall
- 3 joined together along longitudinal edges of the walls;
- 4 the slat-support guides are structural aluminum alloy 6063-T52 or at least
- 5 a substantial equivalent thereof;
- 6 said slat-support guide front and back walls having rectangular cross
- 7 sections with a width of about one inch and a thickness of about one-eighth inch;
- 8 said slat-support guide side walls having rectangular cross sections with a
- 9 width of about one-half inch and a thickness of about one-eighth inch;
- 10 said slat-support guide side walls having slots distributed evenly to
- 11 correspond with shape, size, and direction of slanted slats;
- 12 said slat-support guides have ends which are affixed to the shutter
- 13 framework;
- 14 said front wall of slat-support guide affixed to outward edges of slanted
- 15 slats;
- 16 said back wall of slat-support cover affixed to inward edges of slanted

17 slats; and

18 said slat-support guides have the appearance of mullions.

1 **13.** The pressure-vent hurricane shutter of claim 1 wherein:

2 the shutter framework is sized, shaped-hinge attachment to a top of the

3 structural member of the building proximate the building aperture.

1 **14.** A pressure-vent hurricane shutter comprising:

2 at least one shutter framework encompassing slatted-louver apertures;

3 the shutter framework is a Bahama Shutter having top-hinge attachment to

4 a top of the structural member of the building proximate the building aperture;

5 the shutter framework including structural beams to which ends of slanted

6 slats for the slatted-louver apertures are affixed and to which ends of slat-support

7 guides are attached orthogonally to the slanted slats intermediate the ends of the

8 inward and outward edges of the slanted slats;

9 the shutter framework, the slats, slat-support guides, the hinge and inter-

10 structural attachments thereof having a structural composite that has at least

11 predetermined strength for shutter-related protection of the building against

12 storm-borne objects, wind and rain;

13 the slatted-louver apertures having predetermined venting of storm

14 buildups and bursts of pressure and vacuum that react on buildings;
15 the structural beams included in the shutter framework are structural metal
16 tubes having a cross section that is rectangular; and
17 a metal of which the structural metal tubes are made has predetermined
18 material strength, rigidity, thickness and structure for the shutter framework to
19 have the structural composite with at least the predetermined strength for shutter-
20 related protection of the building against storm-borne objects, wind and rain.

1 **15.** The pressure-vent hurricane shutter of claim 14 wherein:
2 the structural beams included in the shutter framework are structural
3 aluminum tubes having a cross section that is rectangular with face walls being
4 about one to two inches wide and orthogonal edge walls being about one and
5 one-half inches wide;
6 the face walls and the edge walls being about one-eighth of an inch thick;
7 the metal of the structural aluminum tubes being aluminum alloy 6063-
8 T52 or at least a substantial equivalent thereof;
9 the structural beams of the shutter framework are affixed together at
10 joining edges;
11 the slanted slats include structural flat-bar metal have a cross section that
12 is rectangular;

13 a metal of which the slanted slats are made has predetermined material
14 strength, rigidity, thickness and structure for the slanted slats to have the
15 structural composite with at least the predetermined strength for slatted-louver
16 protection of the building against storm-borne objects, wind and rain;

17 the slanted slats are structural aluminum flat bar having a cross section
18 that is rectangular with face walls being about one inch wide and edge walls
19 being about one-quarter inch wide;

20 the slanted slats being about one-quarter inch thick;

21 the metal of the slanted slats being aluminum alloy 6063-T52 or at least a
22 substantial equivalent thereof;

23 the ends of the slanted slats are affixed to the shutter framework;
24 the slat-support guides are structural aluminum alloy 6063-T52;
25 the slat-support guides have ends which are affixed to the shutter
26 framework; and

27 the inward edges of the slanted slats are affixed to the front wall of the
28 slat-support guides.

1 **16.** The pressure-vent hurricane shutter of claim 14 wherein:
2 the face walls of the slanted slats are spaced apart about one-half inch
3 orthogonally; and

4 the slanted slats are juxtaposed vertically with dihedral angles of the face
5 walls and dihedral angles of the edge walls being horizontal.

1 **17.** The pressure-vent hurricane shutter of claim 14 wherein:
2 hold down tabs are affixed to bottom portion of horizontal shutter
3 framework;
4 said hold down tabs have a hole in which a screw of a predetermined size
5 can be inserted; and
6 said hold down tabs are made of a metal of predetermined material
7 strength, rigidity, thickness and structure for the shutter framework to have the
8 structural composite with at least the requisite strength for shutter-related
9 protection of the building against storm-borne objects, wind and rain.

1 **18.** The pressure-vent hurricane shutter of claim 14 wherein:
2 the hinge is ribbed.

1 **19.** The pressure-vent hurricane shutter of claim 14 wherein:
2 the structural member of a proximate a building aperture has a hole
3 corresponding to the location of the hold down tabs.

1 **20.** The pressure-vent hurricane shutter of claim 14 wherein:

2 said slat-support guides have a front wall, two side walls, and a back wall

3 joined together along longitudinal edges of the walls;

4 the slat-support guides are structural aluminum alloy 6063-T52 or at least

5 a substantial equivalent thereof;

6 said slat-support guide front and back walls having rectangular cross

7 sections with a width of about one inch and a thickness of about one-eighth inch;

8 said slat-support guide side walls having rectangular cross sections with a

9 width of about one-half inch and a thickness of about one-eighth inch;

10 said slat-support guide side walls having slots distributed evenly to

11 correspond with shape, size, and direction of slanted slats;

12 said front wall of slat-support guide affixed to outward edges of slanted

13 slats;

14 said back wall of slat-support guide affixed to inward edges of slanted

15 slats;

16 said slat-support guides have ends which are affixed to the shutter

17 framework; and

18 said slat-support guides have the appearance of mullions.

1 **21.** A pressure-vent hurricane shutter comprising:

2 at least one shutter framework encompassing slatted-louver apertures;

3 the shutter framework is a Colonial Shutter having side-hinge attachment

4 to sides of the structural member of the building proximate the building aperture;

5 the shutter framework including structural beams to which ends of slanted

6 slats for the slatted-louver apertures are affixed and to which ends of slat-support

7 guides are attached orthogonally to the slanted slats intermediate the ends of

8 inward edges of the slanted slats;

9 the shutter framework, the slats, the slat-support guides, the hinge and

10 inter-structural attachments thereof having a structural composite that has at least

11 predetermined strength for shutter-related protection of the building against

12 storm-borne objects, wind and rain;

13 the slatted-louver apertures having predetermined venting of storm

14 buildups and bursts of pressure and vacuum that react on buildings;

15 the structural beams included in the shutter framework are structural metal

16 tubes having a cross section that is rectangular; and

17 a metal of which the structural metal tubes are made has predetermined

18 material strength, rigidity, thickness and structure for the shutter framework to

19 have the structural composite with at least the predetermined strength for shutter-

20 related protection of the building against storm-borne objects, wind and rain.

1 **22.** The pressure-vent hurricane shutter of claim 21 wherein:

2 the structural beams included in the shutter framework are structural

3 aluminum tubes having a cross section that is rectangular with face walls being

4 about one to two inches wide and orthogonal edge walls being about one and

5 one-half inches wide;

6 the face walls and the edge walls being about one-eighth of an inch thick;

7 the metal of the structural aluminum tubes being aluminum alloy 6063-

8 T52 or at least a substantial equivalent thereof;

9 the structural beams of the shutter framework are affixed together at

10 joining edges;

11 the slanted slats include structural flat-bar metal have a cross section that

12 is

13 rectangular;

14 a metal of which the slanted slats are made has predetermined material

15 strength, rigidity, thickness and structure for the slanted slats to have the

16 structural composite with at least the predetermined strength for slatted-louver

17 protection of the building against storm-borne objects, wind and rain;

18 the slanted slats are structural aluminum flat bar having a cross section

19 that is rectangular with face walls being about one inch wide and edge walls

20 being about one-quarter of an inch wide;

21 the slanted slats being about one-quarter of an inch thick;

22 the metal of the slanted slats being aluminum alloy 6063-T52 or at least a

23 substantial equivalent thereof;

24 the ends of the slanted slats are affixed to the shutter framework;

25 the slat-support guides are structural aluminum alloy 6063-T52 or at least

26 a substantial equivalent thereof having rectangular cross section with a width of

27 about one inch and a thickness of about one-eighth inch;

28 the slat-support guides have ends which are affixed to the shutter

29 framework; and

30 the inward edges of the slanted slats are affixed to the slat-support guides.

1 **23. The pressure-vent hurricane shutter of claim 21 wherein:**

2 the face walls of the slanted slats are spaced apart about one-half inch

3 orthogonally; and

4 the slanted slats are juxtaposed vertically with dihedral angles of the face

5 walls and dihedral angles of the edge walls being horizontal.

6 **24. The pressure-vent hurricane shutter of claim 21 wherein:**

7 hold down tabs are affixed to top and bottom portions of horizontal shutter

8 framework;

9 said hold down tabs have a hole in which a screw of a predetermined size
10 can be inserted; and

11 said hold down tabs are made of a metal of predetermined material
12 strength, rigidity, thickness and structure for the shutter framework to have the
13 structural composite with at least the requisite strength for shutter-related
14 protection of the building against storm-borne objects, wind and rain.

1 **25.** The pressure-vent hurricane shutter of claim 21 wherein:
2 the side-hinge is ribbed.

1 **26.** The pressure-vent hurricane shutter of claim 21 wherein:
2 the structural member of a proximate a building aperture has a hole
3 corresponding to the location of the hold down tabs.

1 **27.** The pressure-vent hurricane shutter of claim 21 wherein:
2 said slat-support guides have a front wall, two side walls, and a back wall
3 joined together along longitudinal edges of the walls;
4 the slat-support guides are structural aluminum alloy 6063-T52 or at least
5 a substantial equivalent thereof;
6 said slat-support guide front and back walls having rectangular cross

7 sections with a width of about one inch and a thickness of about one-eighth inch;

8 said slat-support guide side walls having rectangular cross sections with a

9 width of about one-half inch and a thickness of about one-eighth inch;

10 said slat-support guide side walls having slots distributed evenly to

11 correspond with shape, size, and direction of slanted slats;

12 said front wall of slat-support guide affixed to outward edges of slanted

13 slats;

14 said back wall of slat-support guide affixed to inward edges of slanted

15 slats;

16 said slat-support guides have ends which are affixed to the shutter

17 framework; and

18 the slat-support guides have the appearance of mullions.